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UNITED STATES DEPARTMENT OF AGRICULTURE
Agricultural Research Service

ARS-71-3
Supplement 6
December 1957

PUBLICATIONS AND PATENTS
of the
NORTHERN UTILIZATION RESEARCH AND DEVELOPMENT DIVISION,
Peoria, Illinois, for the period

JANUARY-JUNE 1957

In requesting single copies of publications, please note that if titles are marked with an asterisk (*), there is no supply of reprints available for distribution. Photostatic copies of most journal articles can be purchased at nominal cost through the Library of the U. S. Department of Agriculture, Washington 25, D. C.

Copies of patents, which are assigned to the Secretary of Agriculture, can be obtained only by purchase (25 cents each) from the U. S. Patent Office, Washington 25, D. C.

The abstracts for these publications and patents describe current research activities and indicate progress achieved by the Northern Division. Congress in 1938 authorized four regional laboratories to conduct basic and applied research designed to expand, improve, and develop through science and technology the utilization of American farm crops. Agricultural products assigned the Northern Division for study are: Wheat, corn, and other cereal grains; soybeans, flaxseed, and other oilseeds; grasses, forages, and new crops. Also studied are the straws, stalks, hulls, cobs, and other forms of agricultural residues from these products.

Previous lists of publications and patents were issued as NM-305, AIC-187, and AIC-318, with supplements. Copies of these lists are available on request.

PUBLICATIONS

[Publications marked (*) are not available for distribution.]

A SELECTION OF MEDIA FOR MAINTENANCE AND TAXONOMIC STUDY OF *STREPTOMYCES*.

T. G. Pridham, P. Anderson, C. Foley, L.A. Lindenfelser, C. W. Hesselstine, and R. G. Benedict.

Antibiotics Annu.: 947-953. 1956-1957.

Nineteen different agar media were tested with about 500 strains of Streptomyces to select substrata for maintenance and taxonomic study of these forms. The 10 best agar substrata listed in decreasing order of their usefulness were: Tomato paste and oatmeal, yeast extract, Hickey and Fresner's, tomato paste, Bennett's, potato dextrose, Carvajal's oatmeal, asparagine dextrose, inorganic salts and starch, and Czapek's solution. Although this number may appear excessive, it allows the worker considerable choice in selecting optimal media for maintenance of strains and also permits the determination of characteristics of taxonomic significance such as morphology of sporophores, spore color (color of mature sporulating aerial mycelium), color of reverse of cultures, and color of soluble pigment, if produced.

ROAD AND LABORATORY TESTS OF VAPOR LOCK IN ALCOHOL MOTOR FUELS.

C. B. Kretschmer, C. W. Blessin, M. M. Gilbert, W. B. Roth, and Richard Wiebe
Philippine Agr. Engin. J. VI(1): 7-12. 1957.

Since addition of alcohol to gasoline raises the vapor pressure of gasoline, the resulting blend will be more volatile than either alcohol or gasoline alone. The alcohol-gasoline blend may, therefore, have a greater tendency towards vapor lock than either component. The purpose of the road and laboratory tests was to establish a criterion for the susceptibility of a blend to vapor lock. The criterion was found to be the temperature at which the liquid-vapor ratio of the fuel equaled 30. On the basis of the data given, blends may be formulated which will show the same resistance towards vapor lock as commercial gasoline.

ELECTRONIC FOAM CONTROLLER FOR FERMENTORS.

V. F. Pfeifer and E. N. Heger.

Appl. Microbiol. 5(1): 44-47. January 1957.

The construction and operation of an electronic foam controller suitable for use with fermentation vessels is described. Details are given of a complete system making use of this electronic device to control fermentations of the aerobic type in which large quantities of air are dispersed and large amounts of electrical energy are dissipated.

The controller operating at low electrode voltage is simple and easy to construct, and its components are readily available. The controller is actuated when foam in

the fermentor touches an insulated electrode, and small amounts of antifoam agent are released as determined by a timer. It may be used for other purposes, such as level control or interface control in liquid-liquid systems. By incorporating several sensing and activating circuits into the controller, it may be used to perform several functions simultaneously.

A NOTE ON IMPROVED INTERPRETATION OF THE 2,3,5-TRIPHENYLTETRAZOLIUM CHLORIDE COLOR TEST FOR VIABILITY AS AN INDICATION OF THE PROCESSING VALUE OF CORN.

R. U. Schenk, M. M. MacMasters, and F. R. Senti.

Cereal Chem. 34(1): 69-70. January 1957.

Comparing germination of one longitudinal half of a corn kernel embryo used as control, with the opposite half treated with 2,3,5-triphenyltetrazolium chloride (TTC), showed that molds growing in the germ can sometimes reduce the TTC. Heat-damaged corn had rubbery germs which did not reduce TTC. Mold-killed germs sometimes reduced TTC but were easily identified because they normally had a friable texture.

THE ROLE OF A CULTURE COLLECTION IN THE UTILIZATION OF AGRICULTURAL PRODUCTS.

Richard W. Jackson.

Industries agricoles et alimentaires (French Journal) 74^o Année (1): 19-26. January 1957.

Since microorganisms are of great importance in the utilization of agricultural products, a large fermentation group with a culture collection was established in 1938 at the Northern Laboratory. The collection now contains 2,000 cultures of bacteria, yeasts, and molds which are of industrial significance or potentiality. It is maintained by several curators who do basic taxonomic and genetic research on selected forms. It is constantly used by the other research groups of the Fermentation Section in developing new methods for the production of vitamins, antibiotics, enzymes, organic acids, foods and feeds, and in conducting innumerable microbiological analyses. The collection supplies about 2,000 subcultures annually to government, industry, and university laboratories throughout the world.

TWO GENERA OF MOLDS WITH LOW TEMPERATURE GROWTH REQUIREMENTS.

C. W. Hesseltine and Patricia Anderson.

Bulletin of the Torrey Bot. Club 34(1): 31-45. January 1957

The synonymy and history of *Chaetostylum* and *Chaetocladium* are given. *Chaetostylum* is considered to be monotypic, while *Chaetocladium* is believed to contain two distinct species. Conditions for producing zygospores and a description of them are given for the latter. All species described grow at 7° C

GLYCERIDE STRUCTURE OF VEGETABLE OILS BY COUNTERCURRENT DISTRIBUTION.

II. SOYBEAN OIL.

C. H. Scholfield and Mary A. Hicks.

The J. of the Amer. Oil Chemists' Soc. 34(2): 77-80. February 1957.

Soybean oil was fractionated in a 200-tube countercurrent distribution apparatus. Fractions were obtained with iodine values both too high and low to conform to an even distribution. From the weight distribution curve, iodine value, and spectrophotometric analyses, the oil is estimated to contain 5.2% dilinoleolinolenin, 13.7%

trilinolein, 9.2% oleo-linoleo-linolenin, and 25.2% oleo-dilinolein. This composition is in agreement with a random distribution pattern. Also, the fatty acid content of the nine saturated fractions indicates the presence of disaturates and dioleins which are not permitted under an even distribution. Based upon this type of information, it is concluded that the fatty acids in soybean oil glycerides approach a random-type distribution.

PHYTIN ELIMINATION IN SOYBEAN PROTEIN ISOLATION.

Allan K. Smith and Joseph J. Rackis.

J. of Amer. Chem. Soc. 79(3): 633-637. February 1957.

Phytates account for about 70 percent of the phosphorus in soybean meal. In extracting proteins from the meal, the phytic acid reacts with the proteins to form complex products of varying composition. In the water extract of soybean meal (pH 6.6) such reaction, if any, is very slow; however, it increases as the pH is lowered in order to precipitate the protein. When the acid-precipitated protein is dispersed in the range of pH 2.0-3.0 and excess sodium phytate added, about 96 percent of the nitrogen is precipitated; the reaction product is 14.52 percent nitrogen and 3.06 percent phosphorus.

Phytates can be eliminated from water extract of soybean meal by a combination of dialysis and treatment with the anionic-exchange resin of Dowex-1-X10. Electrophoretic studies show that one minor component of the acid-precipitated protein is a protein-phytate reaction product and that two other minor components are affected by the presence of phytates. Removing phytic acid raises the isoelectric point of the acid-precipitated protein by 0.8 units and increases the pH range of complete dispersibility on the acid sides of its isoelectric point.

THE SEPARATION ON GIBBERELLIN A AND GIBBERELIC ACID ON BUFFERED PARTITION COLUMNS.

Frank H. Stodola, G. E. N. Nelson, and Dean J. Spence.

Arch. of Biochem. and Biophys. 66(2): 438-443. February 1957

A crude mixture of gibberellins produced by the fungus *Fusarium moniliforme* (*Gibberella fujikuroi*) NRRL 2284 on a pilot-plant scale was separated by buffer partition chromatography into gibberellin A ($[\alpha]_D + 36^\circ$) and gibberellic acid ($[\alpha]_D + 92^\circ$).

WHEAT STRAW CORRUGATING BOARD--AN IMPROVED PRODUCT.

A. J. Ernst and T. F. Clark.

Tech. Assoc. of the Pulp and Paper Indus. 40(2): 120-121. February 1957.

Physical tests were made on commercial straw corrugating boards produced in 1946, 1948, 1950, and 1955. Tests included bursting strength, tensile strength, tearing resistance, and Concora flat crush.

Test results illustrate the changes made in this product in recent years. Statistical analysis of data on bursting strength data indicates that highly significant improvements occurred between 1948 and 1950 and between 1950 and 1955. The Concora flat crush values for 1950 and 1955 indicate a high quality corrugating medium is being prepared from wheat straw. The various test values reflect the combined results of laboratory research at the Northern Division and adoption of these findings by the mills to make better strawboards.

APPLICATION OF THERMAL DIFFUSION TO SEPARATION OF ALIPHATIC ALCOHOLS AND FATTY ACIDS FROM THEIR MIXTURES.

C. W. Blessin, C. B. Kretschmer, and Richard Wiebe.

Analyt. Chem. 29(3): 408-409. March 1957.

While separation of mixtures of aliphatic alcohols and fatty acids by thermal diffusion is very effective, for instance, in mixtures of paraffin hydrocarbons, very little or no separation was found between alcohols and fatty acids. This failure is attributed to hydrogen bonding which obscures structural differences preventing separation.

CHARACTERIZATION OF DEXTRANS BY THE OPTICAL ROTATION OF THEIR CUPRAMMONIUM COMPLEXES.

T. A. Scott, N. N. Hellman, and F. R. Senti.

J. of the Amer. Chem. Soc. 79(5): 1178-1182. March 1957

Optical rotations at 4358 Å in water and cuprammonium solutions were measured for several dextrans differing widely in their content of 1,6-, 1,4-, and 1,3-like linked anhydro-glucopyranoside units as determined by periodate oxidation analyses. Based on previous results for the optical rotational shifts of simple glucopyranosides, it is shown how the optical rotational shift data for dextrans can be used to resolve the percentage of 1,4-like linked units derived from periodate oxidation analyses into the proportions of 1,4- and 1,2-linked units. By this method a large proportion of the 1,4-like linked units in NRRL B-1299 and NRRL B-1399 dextrans were found to be linked through Position 2. These are the first dextrans to be reported to contain the 1→2-linkage. Optical rotational shift data also indicate that NRRL B-1149 and NRRL B-1355 fraction S dextrans have non-1,6-linked units which occur in linear portions of the polysaccharide chain rather than as branch points in the molecule.

ELECTROLYTIC PREPARATION OF PERIODATE OXYSTARCH.

C. L. Mehlretter, J. C. Rankin, and P. R. Watson.

Indus. and Engin. Chem. 49(3): 350-354. March 1957.

A convenient, inexpensive electrolytic method has been devised for the preparation of periodate oxystarch. Starch, suspended in the anolyte of a divided cell, was completely oxidized to oxystarch by periodic acid formed electrolytically from iodic acid present. Since the oxidant was continuously regenerated in the cell, only 7.5 percent of the theoretical quantity was required for efficient conversion of starch to oxystarch. Optimal conditions for the electrolysis were found by investigating the effect on the course of the oxidation of current density, time, temperature, pH, concentration of iodic acid and of starch, and diaphragm and anode composition. A quantitative yield of product was obtained at relatively high current efficiency with low loss of oxidant. Anolyte filtrates could be effectively recycled a number of times; oxidant could be recovered from the solution if desired. The procedure may also be useful for the periodate oxidation of other polysaccharides or of organic substances of appropriate structure.

EXTRACTION OF MORPHINE FROM POPPY CAPSULES AND ITS RECOVERY BY ION EXCHANGE.

C. L. Mehlretter and F. B. Weakley.

J. of the Amer. Pharm. Assoc. (Scientific Edition) 46(3): 193-196. March 1957.

An efficient method for obtaining morphine from domestically grown poppies has been developed. Morphine was completely extracted from dried poppy capsules with water-saturated isobutanol containing 0.23% ammonia. By passing the extract through a cation-exchange resin bed, practically all of the alkaloid was absorbed. Quantitative elution of morphine from the bed was achieved with dilute aqueous alkali. Crude morphine obtained by precipitation from the neutralized and concentrated eluate could be converted to pharmaceutical grade hydrochloride without difficulty. The overall recovery of morphine was 90%.

REACTIONS OF CONJUGATED FATTY ACIDS. V. PREPARATION AND PROPERTIES OF DIELS-ALDER ADDUCTS AND THEIR ESTERS FROM *TRANS,TRANS*-CONJUGATED FATTY ACIDS DERIVED FROM SOYBEAN OIL.

M. J. Danzig, J. L. O'Donnell, E. W. Bell, J. C. Cowan, and H. M. Teeter.

The J. of the Amer. Oil Chemists' Soc. 34(3): 136-138. March 1957.

Adducts from soybean fatty acids, conjugated with alkali and isomerized with iodine to the *trans,trans*-configuration, were prepared by condensation with maleic anhydride and acrylic acid. These adducts were isolated, purified, and converted to esters using a variety of alcohols, including methyl, ethyl, *n*-propyl, *n*-butyl, and allyl alcohols. Esters made from saturated alcohols were converted into the corresponding epoxy derivatives. All of the esters (except allyl) and all of the epoxy esters were compatible with an equal weight of polyvinyl chloride and appeared to be primary plasticizers for this plastic. The epoxy esters were effective in inhibiting heat deterioration of polyvinyl chloride.

THE GENUS *ACTINOMUCOR*.

Chester R. Benjamin and C. W. Hesseltine.

Mycol. 49(2): 240-249. March-April 1957.

On the basis of study of some 50 strains of *Actinomucor*, the genus is re-evaluated and found still to be monotypic. A new combination *Actinomucor elegans* (Eidam) Benjamin and Hesseltine is made. Descriptions in English and its synonymy are given. The genus shares a number of characteristics with *Mucor* and *Rhizopus*, but is taxonomically distinct.

Some cultural characteristics are noted. Test strains utilized common nitrogen sources and various carbon sources, but neither lactose nor cellulose. A great number of mating combinations on a variety of substrata failed to produce evidence of zygospore formation.

A PILOT PLANT FOR WET-MILLING.

Roy A. Anderson.

Cereal Sci. Today 2(4): 78-80. April 1957.

Pilot-plant facilities at the Northern Utilization Research and Development Division for studying the wet-milling of cereal grains are described. The plant was specially constructed so that variables involved in the various wet-milling and separating operations could be investigated. Data obtained provide information so that estimates of investment and operating costs can be prepared for the entire process, and from these investigations the design of a plant is possible.

USE OF ION EXCHANGE IN RECOVERY AND PARTIAL PURIFICATION OF MORPHINE FROM AQUEOUS EXTRACTS OF POPPY CAPSULES.

T. A. McGuire, C. H. Van Etten, F. R. Earle, and F. R. Senti.

J. of the Amer. Pharm. Assoc. (Scientific Edition) 46(4): 247-248. April 1957.

A cation-exchange resin was used successfully to recover morphine from aqueous extracts of poppy capsules. With 65 ml. of extract containing 65 mg. of morphine applied per gram of resin, approximately 94 percent of the morphine was recovered when the resin was in the sodium form and 89 percent when in the ammonium form. The resin showed no loss of capacity after 21 cycles. The crude solid product from the column eluate contained about 54 percent morphine. By passing the eluate from the ammonium resin through an anion-exchange resin, a solid product containing 85 percent morphine was obtained.

REACTIONS OF CONJUGATED FATTY ACIDS. IV. DIELS-ALDER ADDUCTS OF 9,11-OCTADECADIENOIC ACID.

H. M. Teeter, J. L. O'Donnell, W. J. Schneider, L. E. Gast, and M. J. Danzig.

J. of Org. Chem. 22(5): 512-514. May 1957.

Adducts of *trans,trans*-9,11-octadecadienoic acid and dienophiles including nitroethylene, β -nitrostyrene, acrylic acid, acrylonitrile, acrolein, methacrolein, methyl vinyl ketone, methyl vinyl sulfone, and acetylene carboxylic acid were prepared. The presence of a 6-membered ring in the adducts of acrolein, acrylic acid, and acetylene carboxylic acid was demonstrated. The nitroethylene adduct was shown to exist in two isomeric forms.

REACTIONS OF UNSATURATED FATTY ALCOHOLS. II. POLYMERIZATION OF VINYL ETHERS AND FILM PROPERTIES OF POLYMERS.

W. J. Schneider, L. E. Gast, E. H. Melvin, C. A. Glass, and H. M. Teeter.

The J. of the Amer. Oil Chemists' Soc. 34(5): 244-247. May 1957.

Vinyl ethers of stearyl, soybean, and linseed fatty alcohols were prepared and polymerized in hydrocarbon or chlorinated solvents at temperatures down to -30° C. with several Lewis-acid-type catalysts. Stearyl polyvinyl ether was a white, waxy solid melting at $48-50^{\circ}$ C., while soybean and linseed polyvinyl ethers were colorless, viscous liquids. Molecular weights of these polymers range from 1,500 to 15,000 and higher, depending on the conditions of polymerization. Hard films were obtained from soybean and linseed polyvinyl ethers with a cobalt drier by baking at 150° C.; softer ones resulted when lead driers were used.

Baked soybean films containing cobalt drier dissolved completely in aqueous alkali, whereas the baked films made with lead drier did not dissolve. Some improvement in alkali resistance was achieved with cobalt films by adding aromatic amines as antioxidants.

REACTIONS OF UNSATURATED FATTY ALCOHOLS. III. VISCOSITY AND MOLECULAR WEIGHT STUDIES ON SOME VINYL ETHER POLYMERS.

L. E. Gast, W. J. Schneider, and H. M. Teeter.

The J. of the Amer. Oil Chemists' Soc. 34(6): 307-310. June 1957.

Molecular weights of polymers of vinyl ethers of stearyl, soybean, and linseed fatty alcohols were measured cryoscopically in cyclohexane and ranged from 1,500 to 15,000. Viscosity measurements at 25° C. were made on benzene solutions of each polymer preparation and intrinsic viscosities were determined. Logarithmic plots of molecular weight vs. intrinsic viscosity gave linear relationships for stearyl, soybean, and linseed polymers. From these plots values for K' and a in the equation of Mark and Houwink were obtained.

MICROSCOPIC CHARACTERISTICS OF STARCHES IN THE IDENTIFICATION OF GROUND CEREAL GRAINS.

M. M. MacMasters, M. J. Wolf, and H. L. Seckinger.

J. of Agr. and Food Chem. 5(6): 455-458. June 1957.

Starch granules, either free or as held within particles of seed tissue, afford a means to identify cereal grains in ground mixture. The size, shape, and changes in these characteristics during swelling in hot water give clues to the origin of the starch granules. The starch granules are loosely arranged in the floury endosperm cells of corn and sorghum but fragments containing such cells can be distinguished from similar fragments of wheat, rye, or barley by differences in starch granule size. The starch granules in horny endosperm of corn and sorghum are tightly packed and present the appearance of mosaic. Corn and sorghum can be distinguished by the appearance of pieces of hull; sorghum hull contains very small starch granules while corn hull contains no starch. (Illustrated with photomicrographs.)

LIST OF PUBLICATIONS AND PATENTS--OILSEEDS AND RELATED SUBJECTS.

U. S. Dept. Agr. ARS-71-5, Supplement 2, March 1957. 3 pp.

(Processed) February 1957.

CONTRACT RESEARCH PUBLICATIONS

(Report of research work done by outside agencies under contract with the U. S. Department of Agriculture and supervised by the Northern Utilization Research and Development Division of the Agricultural Research Service.)

*STRUCTURE OF CORN HULL HEMICELLULOSE. PART III. IDENTIFICATION OF THE METHYLATED ALDOBIOURONIC ACID OBTAINED FROM METHYL CORN HULL HEMICELLULOSE.

R. Montgomery and F. Smith. University of Minnesota, St. Paul, Minnesota.

J. of the Amer. Chem. Soc. 79(3): 695-697. February 1957.

*STRUCTURE OF CORN HULL HEMICELLULOSE. PART IV. PARTIAL HYDROLYSIS AND IDENTIFICATION OF 3-O-α-D-XYLOPYRANOSYL-L-ARABINOSE AND 4-O-β-D-GALACTO-PYRANOSYL-β-D-XYLOPYRANOSE.

R. Montgomery, F. Smith, and H. C. Srivastava. University of Minnesota, St. Paul, Minnesota.

J. of the Amer. Chem. Soc. 79(3): 698-700. February 1957.

*STRUCTURE OF CORN HULL HEMICELLULOSE. PART V. PARTIAL HYDROLYSIS AND IDENTIFICATION OF 4-O-β-D-XYLOPYRANOSYL-D-XYLOSE AND 5-O-D-GALACTO-PYRANOSYL-L-ARABOFURANOSE.

H. C. Srivastava and F. Smith. University of Minnesota, St. Paul, Minnesota.

J. of the Amer. Chem. Soc. 79(4): 982-984. February 1957.

APPLICATION OF HETEROKARYONS OF *ASPERGILLUS* TO COMMERCIAL-TYPE FERMENTATIONS.

Alex Giegler and Kenneth B. Raper. University of Wisconsin, Madison, Wisconsin.

Appl. Microbiol. 5(2): 106-110. March 1957.

SOUTH DAKOTA SITES FOR STRAW PULPING PLANTS.

R. L. Kristjanson and Winston K. Ullman. South Dakota College Agricultural Experiment Station, College Station, South Dakota.

Bulletin 461: 24 pp. March 1957.

NORTH DAKOTA'S POTENTIALS FOR STRAW PULPING INDUSTRY.

Fred R. Taylor and Warren Tewksbury, North Dakota College Agricultural Experiment Station, Fargo, North Dakota.

Bulletin 406: 40 pp. April 1957.

PATENTS

These patents are assigned to the Secretary of Agriculture. Copies of patents may be purchased from the U. S. Patent Office, Washington, D. C.

ENZYMIC PRODUCTION OF DEXTRAN OF INTERMEDIATE MOLECULAR WEIGHTS.

Julian Corman and Henry M. Tsuchiya.

U. S. Patent 2,776,925. January 8, 1957.

The dextran is produced by the enzymolysis of "native" dextran of relatively high molecular weight. The enzyme employed, dextranase, is used in extremely low concentrations and the product is a dextran of intermediate molecular weight and size depending upon such factors as the concentration of enzyme and the time of enzymolysis. The dextran may be produced *in situ*, in which case the starting materials for the process include sucrose, an excess of dextran sucrase and dextranase.

THE PREPARATION OF ALPHA-KETOGLUTARIC ACID BY *SERRATIA MARCESCENS*.

Eugene S. Sharpe and Julian Corman.

U. S. Patent 2,776,926. January 8, 1957

Alpha-Ketoglutaric acid is produced by cultivating *Serratia marcescens* in a medium containing assimilable nitrogen and glucose. Acid production is favored by introducing oxygen at the aeration efficiency of at least 3.0. The fermentation is complete when the reducing power of the medium has dropped to 0.5 or lower.

HYDROGENOLYSIS OF DIALDEHYDE STARCH TO ERYTHRITOL AND ETHYLENE GLYCOL.

John W. Sloan, Bernard F. Hofreiter, Charles L. Mehlretter, Ivan A. Wolff.

U. S. Patent 2,783,283. February 26, 1957.

Dialdehyde starch is dispersed in aqueous alkali prior to hydrogenation to produce a mixture of erythritol and ethylene glycol. The dispersion step permits the hydrogenation to be applied to a dialdehyde starch preparation having a solids content as high as 50 percent, whereas without the dispersion step the hydrogenation was effective only with 2-percent dispersions of dialdehyde starch.

CARBOXYMETHYL PROTEIN AS A STABILIZER FOR A BUTADIENE-STYRENE LATEX EMULSION PAINT.

Eugene H. Uhing and Leonard L. McKinney.

U. S. Patent 2,788,336. April 9, 1957.

Proteins, such as soybean protein, casein, peanut protein, and cottonseed protein are reacted with carboxymethylating agents such as chloroacetic acid to produce carboxymethyl protein. This product forms stable dispersions in alkaline, neutral or slightly acidic aqueous media and is resistant to biological attack. It is useful as an emulsion stabilizer in water-emulsion paints and other emulsions in which proteins have heretofore been used.

METHOD OF MOLDING OXYSTARCH.

Russell, L. Mellies and Ivan A. Wolff.

U. S. Patent 2,788,546. April 16, 1957.

Oxystarch (periodate oxidized) is molded under conditions of elevated temperatures and pressure in the presence of minor amounts of moisture to form strong, hard semi-transparent molded articles.

HYDROGENOLYSIS OF DIALDEHYDE STARCH TO ERYTHRITOL AND ETHYLENE GLYCOL.

John W. Sloan and Ivan A. Wolff.

U. S. Patent 2,796,447. June 18, 1957.

Dialdehyde starch is subjected to catalytic hydrogenation at 150°-230° C. for 1 to 12 hours. The product comprises a mixture of erythritol and ethylene glycol which may be recovered separately by known methods.

STABILIZATION OF OILS WITH β -(CARBOXYMETHYLMERCAPTO) TRICARBALLYLIC ACID.

Cyril D. Evans and Arthur W. Schwab.

U. S. Patent 2,797, 231. June 25, 1957.

The invention relates to a new chemical compound, β -(Carboxymethylmercapto)-tri-carballylic acid, and to methods for stabilizing glyceride oils by the addition of it in an amount from 0.002% to 0.05%, based on the weight of the oil.